

The True Cost of Using Water

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Illinois Sustainable Technology Center

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Approach to sustainability:

Make ***systems*** more productive and less wasteful!



Sustainable Water Use

We need to understand:

- Hydrologic Systems – How much water use is sustainable?
- Campus Physical, Building, & Energy Systems – In what ways do we use water and how much? How could we use less water?
- Campus Administrative Systems – How do we justify the cost of water savings?



Presentation Overview

- Barrier: “Water is cheap.” (Or is it...?)
- How much does it cost to use water?
 - How do we use water?
 - How much water do we use?
 - Where do we put money into the water? How much?
 - Where does the water go when we’re done?
- We can justify the cost of water savings!



Water is more expensive than you think.

Wasted water =

Wasted Energy (\$)

Wasted Chemicals (\$)

Wasted Labor (\$)

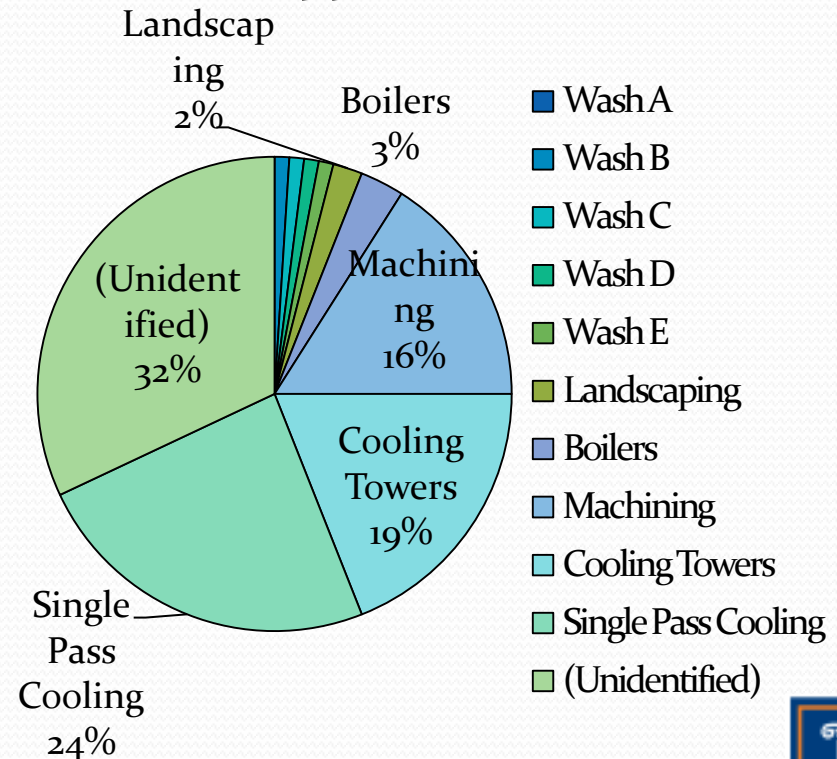


Sample Water Study: Large Manufacturing Facility

Facility Total Water Use:

- *Perceived* cost of water = \$1.71 per 1,000 gallons; \$0.5 million per year
- *True* cost of water = \$10.21 per 1,000 gallons; \$3 million per year

Total Water Use
440 MMGY

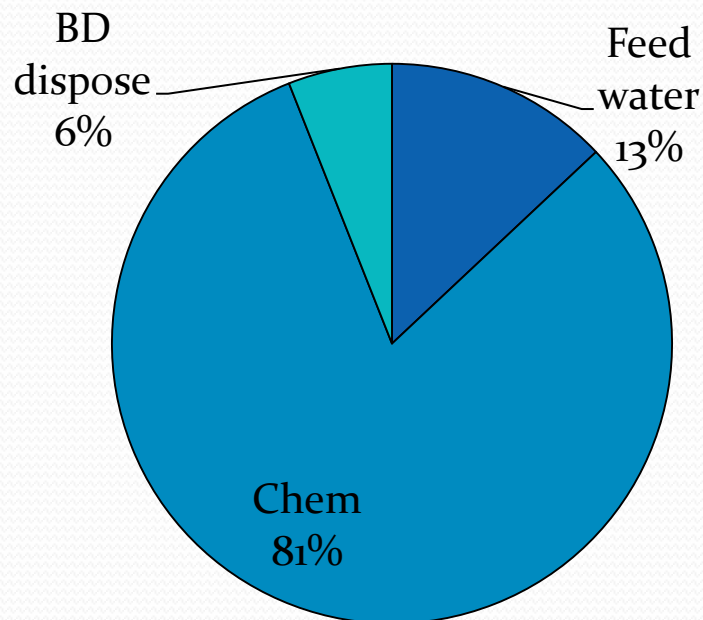


Sample Water Study: Large Manufacturing Facility

Cost to Use Cooling Tower Water

Perceived cost = \$1.71/kgal

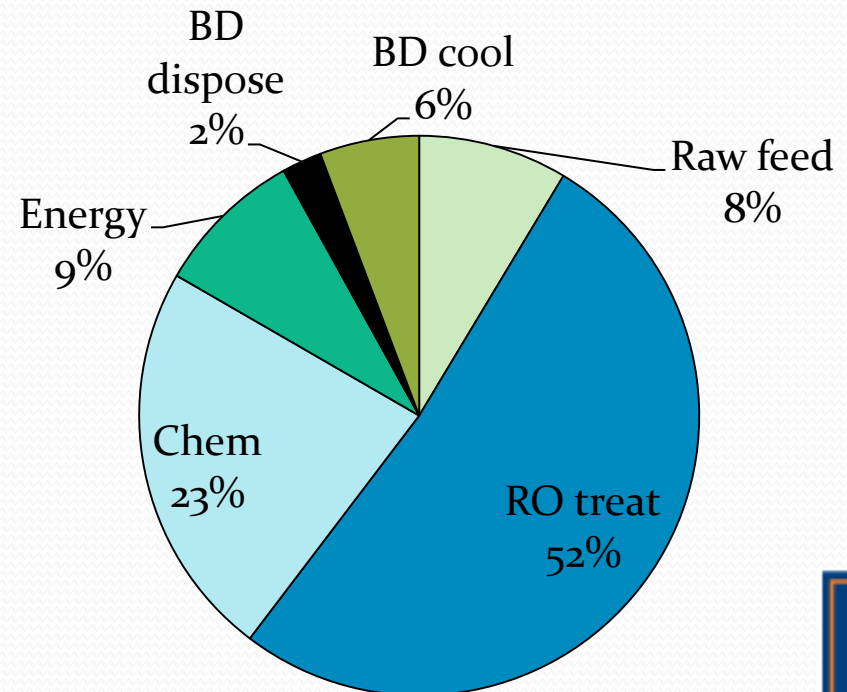
Actual Cost = \$4.46/kgal



Cost to Use Boiler Water

Perceived cost = \$1.71/kgal

Actual Cost = \$9.78/kgal

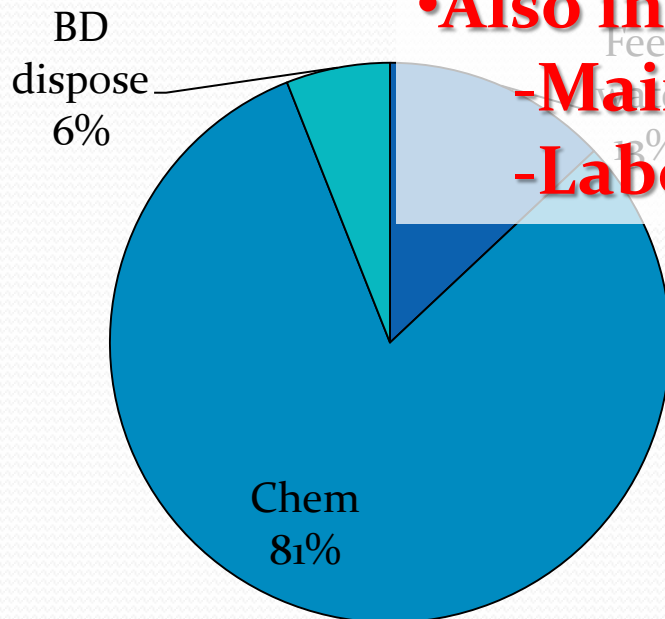


Sample Water Study: Large Manufacturing Facility

Cost to Use Cooling Tower Water

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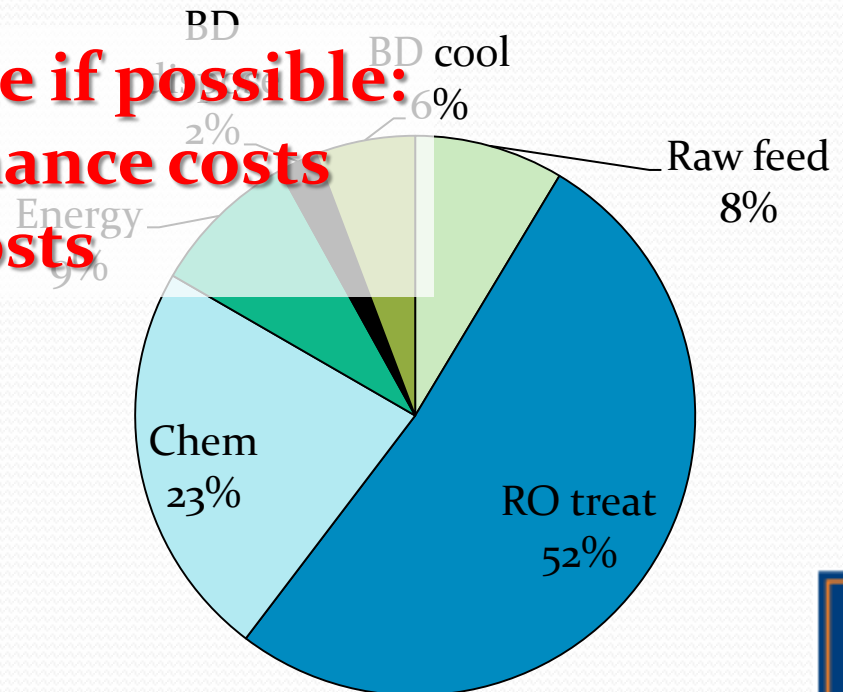
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Cost to Use Boiler Water

Perceived cost = \$1.71/kgal

Actual Cost = \$9.78/kgal



•Also include if possible:
-Maintenance costs
-Labor costs



True Cost of Water on Campus

- Project administration
- Identify major water uses
- Quantify major water uses
- Quantify water use costs



True Cost of Water on Campus

- Project administration
 - Project team
 - Drivers and incentives
 - Staff support
 - Project customer



True Cost of Water on Campus

- Identify major water uses
 - Cooling towers *Water-Energy Nexus*
 - Boilers *Water-Energy Nexus*
 - Power plant operations *Water-Energy Nexus*
 - Landscaping
 - Domestic *Water-Energy Nexus*
 - Specially treated water (RO, DI) *Water-Energy Nexus*
 - Food services *Water-Energy Nexus*
 - Special events



True Cost of Water on Campus

- Quantify major water uses
 - Total annual use
 - Quickly account for the majority
- Need process maps



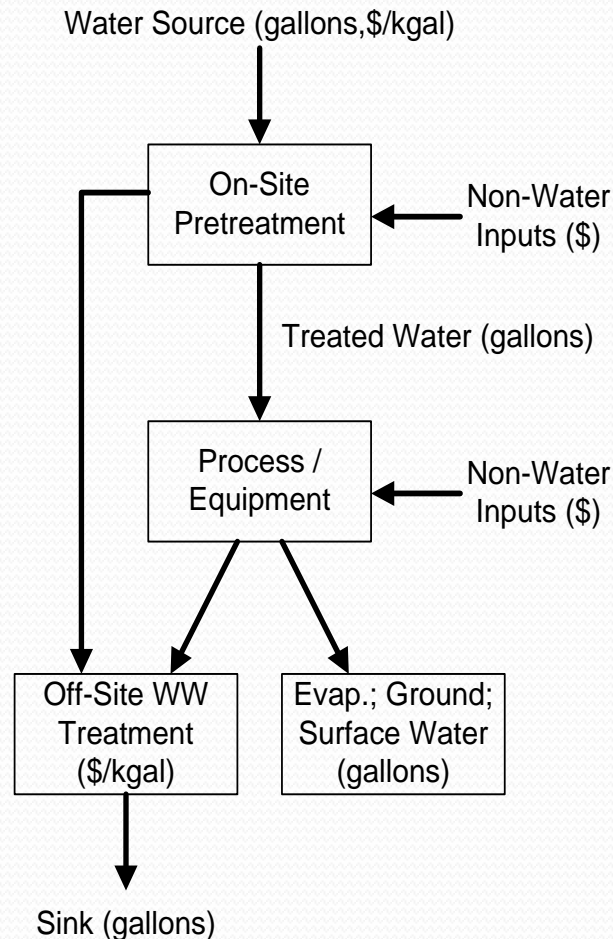
True Cost of Water on Campus

- Quantify water use costs
 - Purchase
 - On-site pretreatment processes
 - Process chemicals
 - Energy
 - Labor
 - Maintenance
- Need process maps



True Cost of Water on Campus

- Process maps
 - Source
 - Points of use
 - Fate
 - Water quantity
 - Input costs



Summary

- True Cost of Water Use
 - Empowered project team with clear goals
 - Quantify specific uses
 - Quantify input costs
- Need to understand processes!



How Much Does it Cost to Use Water On Campus?

More than you think...

We can justify the cost of water savings!

